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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,234	05/10/2001	Russ Tuck	P4508	8604

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EXAMINER
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ART UNIT	PAPER NUMBER
2665	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No.	Applicant(s)	
	09/854,234	TUCK ET AL.	
	Examiner	Art Unit	
	Phuongchau Ba Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2001* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)		4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .	
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) ☐ Notice of Informal Patent Application (PTO-152)	
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .		6) ☐ Other: .	

Claim Objections

1.   Claims 1, 10, 22, 24 are objected to because of the following

informalities:

- Claim 10, line 1, ";" should be changed to --: (colon)--.

- Claim 24, line 4, ":" should be changed to --; (semi-colon)—

- Claim 22, line 2, "the multicast-capable fabric card" should be

  changed to --the fabric card— to avoid lack of antecedent basis in

  claim wherein "a fabric card" is mentioned but not "and "the multicast-

  capable fabric card" as in line 2 of claim 22.

- Claim 1, line 10 "egress" should be changed to -ingress-- & line 11

  "ingress" should be changed to -egress--

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and
> distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 1, 8, 16, 19, 22 and 25 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly

claim the subject matter which applicant regards as the invention.

Regarding the method claimed, claim 25 is not clear what is meant by

"the multicast engine is integrated into the circuitry one of the port of the fabric

card".   Also, claim 25 recites the limitation "the circuitry one of the port of the

fabric card"(line 1-2). There is insufficient antecedent basis for this limitation

in the claim. Claim 25 is vague and indefinite because it is not sure if "the

circuitry" (line 1) is referred to circuitry on line 3 of claim 24. It is noted that

claim 24 does not disclose or recite any circuitry (line 3, claim 24) in the ports

of the fabric card.

Claim 22 recites the limitation "the multicast-capable component" in line

1. There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 16, in lines 7-9 of claim 16 recites "data packets

assigned for multicasting arrive at the port and are diverted to the multicast-

capable component, wherein the packets are replicated or re-addressed and

forwarded", thus lines 7-9 of claim 16 causes claim 16 being vague and

indefinite because on lines 5-6 recites "the multicast-capable component for replicating and re-addressing the replicated data packets" from "multicast-capable port"(lines 1-2, claim 16). If the multicast data packets are diverted to the multicast-capable component wherein the data packets are replicated/re-addressed, then the data packets input to the multicast-capable component have not been replicated yet because the data packets are being diverted not replicated.

Regarding claim 19, claim 19 is not clear what is meant by "multicast-capable port is an external port"? It is not seen how "the multicast-capable port" being the "external port" of what element (of the router, i.e., claim 16 recites "the router having a multicast-capable port" as an internal port—emphasis added)? Also, claim 8 is not seen how the multicast-capable component is an external circuitry of the port? Please clarify how could the multicast-capable component (claim 8, a dependent claim of claim 1) is an external circuitry of the port wherein the multicast-capable port (claim 1) comprises a multicast-capable component.

Regarding claim 1, claim 1 is not seen how could "the multicast-capable

port comprising an ingress for receiving the data packets and the egress for

outputting data packets" but then being characterized in that "data packets

assigned for multicasting arrive at the port on the egress path and output to

the ingress path". Please clarify how the egress and ingress paths

interchanging their functions (i.e., receiving data packets and outputting data

packets) as claim 1.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1-3, 7-10, 12-26 are rejected under 35 U.S.C. 102(b) as being

anticipated by Harriman (5,898,687).

Regarding claim 1: Harriman (5,898,687) discloses a multicast-capable port

110 for replicating multicast data packets comprising:

at least one ingress path 104 into the port for receiving the data packets

(i.e., from multicast engine 200);

at least one egress path 136 out of the port for outputting data packets

(from ITF-Input Translation Function 120); and

a multicast-capable component 200 coupled to the egress 104 and

ingress 102 paths of the port 110, the multicast-capable component 200 for

replicating and readdressing the replicated data packets;

characterized in that data packets assigned for multicasting arrive at the

port on the egress path 136 and are diverted to the multicast-capable

component 200, wherein the packets are replicated or re-addressed and output

to the ingress path 104.

Regarding claim 2: Harriman (5,898,687) discloses that the port 110 is hosted

on a card 110 within a data router 100.

Regarding claim 3: Harriman (5,898,687) discloses the multicast–capable port

110 coupled to other ingress/egress ports 104/136 of the card.

Regarding claim 7: Harriman (5,898,687) discloses that the multicast–capable

port 110 is an integrated circuit (fabric switch card 110).

Regarding claim 8: Harriman (5,898,687) discloses that the multicast–capable

component 200 is implemented as an integrated circuit (fig.2) externally from

the port 110.

Regarding claim 9: Harriman (5,898,687) discloses that there is a table (260,

fig.2) containing instruction for multicasting, table entries being configured by

software (control logic 250, which is including read and write pointers 256 &

258 controlled by controller 254).

Regarding claim 10: Harriman (5,898,687) discloses a multicast–capable fabric

card 110 within a data router 100 comprising:

at least two ports 102 &104 coupled to each other by data paths; and

at least one multicast engine 200;

characterized in that data packets assigned for multicasting arrive at the

multicast-capable fabric card 110 (i.e., at the input ports 102) and are delivered

to the multicast engine 200 wherein they are replicated and/or modified as

needed for multicast and forwarded (i.e., to the output ports 104; fig.1).

Regarding claim 12: Harriman (5,898,687) discloses that a switching facility

(252, fig.2) is provided on the card, the switching facility for managing

port-to-port communication.

Regarding claim 13: Harriman (5,898,687) discloses that the multicast-capable

port 110 is an integrated circuit.

Regarding claim 14: Harriman (5,898,687) discloses that there is a table (260,

fig.2) containing instruction for multicasting, table entries being configured by

software (control logic 250, which is including read and write pointers 256 &

258 controlled by controller 254).

Regarding claim 15: Harriman (5,898,687) discloses a multicast engine 200,

comprising:

one or more first ports 102 for communicating with one or more second

ports 104 of one or switch elements 100; and

circuitry 122 for modifying or replicating multicast packets routed to the

engine {col.4, lines 16-19};

characterized in that multicast packets received from the one or more

fabric cards 110 are replicated and/or modified as needed, and forwarded via

the one or more first ports 102 to one of the one or more of the second ports

104.

Regarding claim 16: Harriman (5,898,687) discloses a multicast-capable data

router 100 (fig.1) having a multicast-capable port 110 for replicating multicast

data packets, the port 110 having

at least one ingress path 102 into the port for receiving the data packets,

at least one egress path 104 out of the port for outputting data packets,

and

a multicast-capable component 200 coupled to the egress and ingress

paths of the port, and the multicast-capable component for replicating and

re-addressing the data packets;

characterized in that data packets assigned for multicasting arrive at the

port (i.e., at the ingress path 102) and are diverted to the multicast-capable

component 200, wherein the packets are replicated or re-addressed and

forwarded (i.e., to the egress path 104).

Regarding claim 17: Harriman (5,898,687) discloses that the multicast-capable

component 200 is integrated into the circuitry (a part) of the multicast-capable

port (fig.1).

Regarding claim 18: Harriman (5,898,687) discloses that the multicast-capable

port is a fabric card port 110 (fig.1).

Regarding claim 19: Harriman (5,898,687) discloses that the multicast-capable

port 110 is an external port (of CPU 106; fig.1).

Regarding claim 20: Harriman (5,898,687) discloses that a table (260, fig.2)

containing instructions for multicasting {col.5, lines 26-45}.

Regarding claim 21: Harriman (5,898,687) discloses a multicast-capable data

router 100 (fig.1) having a fabric card 110 comprising at least two ports 102 &

104 coupled to each other by data paths, and at least one multicast engine 200

(fig.2);

characterized in that data packets assigned for multicasting arrive at the

fabric card and are delivered to the multicast engine wherein they are replicated

and/or modified as needed for multicast and forwarded {col.4, lines 21-51;

col.6, lines 16-39}.

Regarding claim 22: Harriman (5,898,687) discloses that the multicast-capable

component 200 is integrated into the circuitry of the one of the ports of the

multicast-capable fabric card 110 {fig.1}.

Regarding claim 23: Harriman (5,898,687) discloses that a table (260, fig.2)

containing instructions for multicasting {col.5, lines 26-45}.

Regarding claim 24: Harriman (5,898,687) discloses a multicast-capable data

router (100, fig.1), comprising

a multicast engine 200 having one or more first ports (input ports 102;

fig.1) for communicating with one or more second ports (output ports 104;

fig1) of one or more fabric cards 110, and

circuitry 122 for modifying or replicating multicast packets routed to the

engine {col.4, lines 16-19};

characterized in that multicast packets received from the one or more

fabric cards are replicated and/or modified as needed, and forwarded via one or

more of the first ports 102 to one or more of the second ports 104.

Regarding claim 25: Harriman (5,898,687) discloses that the multicast engine

200 is integrated into the circuitry of one of the ports 102 of the fabric card

110 {fig.1}.

Regarding claim 26: Harriman (5,898,687) discloses further comprising a table

(260, fig.2) containing instructions for multicasting {col.5, lines 26-45}.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject
> matter sought to be patented and the prior art are such that the subject matter as a whole
> would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived by
> the manner in which the invention was made.

7.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Harriman (5,898,687) over Baumgartner (5,138,614).

Regarding claim 6: Harriman does not explicitly disclose that the data router

100 is connected to other like data routers distributed over network topology.

Baumgartner (5,138,614) discloses in figure 3 that the data router (MPS)

is connected to other like data routers (MPSs) distributed over network topology

(fig.3). Therefore, it would have been obvious to a skilled artisan to implement

the data router 100 as taught by Harriman into each of the MPSs in fig.3

(multicast packet switches) as taught by Baumgartner and the motivation being

to provide alternate multicast routes as suggested in column 6, lines 24-35 in

Baumgartner.

8.   Claims 4-5, 11, 27-31 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Harriman (5,898,687) over Chao (5,724,351).

Regarding claim 4: Harriman (5,898,687) does not explicitly disclose that more

than one multicast-capable port 110 is mounted on a same card.

Chao (5,724,351) discloses that more than one multicast-capable port

(SSMs; fig.1) is mounted on a same card 100. Therefore, it would have been

obvious to a skilled artisan to implement the plurality of SSMs (multicast-

capable port) as taught in Chao's switch/router 100 into the router/switch 100

as taught by Harriman and the motivation being to minimize the throughput

value at output ports {col.11, lines 51-58, Chao}.

Regarding claim 5: There are multiple cards (SSMs; fig.1 in Chao) within the

data router 100, individual ones (SSM1) of which host at least one

multicast-capable port (SSM1).

Regarding claim 11: Harriman does not explicitly disclose that the

multicast-capable fabric card coupled by port paths to other cards within the

same router.

Chao (5,724,351) discloses the multicast-capable fabric card 104

coupled by port paths (1-N input ports and 1-M & N-M+1-N output ports;

fig.1) to other cards (SSM1-SSMk 104) within the same router 100. Therefore it

would have been obvious to a skilled artisan to implement the router 100

having a plurality of switches (SSM1-SSMk 104) as taught by Chao into the

router 100 in Harriman and the motivation being to minimize the throughput

value at output ports {col.11, lines 51-58, Chao}.

Regarding claims 27 &31: Harriman (5,898,687) discloses a method for

multicasting comprising steps of:

(a) each (engine) having one or more first ports 136 for communicating

with second ports (102 & 104) of the router 100;

(b) receiving multicast packets at one of the second ports 102 and

sending the multicast packets to one of the multicast engines 200 via the first

ports 136;

(c) replicating and/or modifying the data packets for multicasting

according to tabled instructions 260 associated with the multicast engine 200;

(d) forwarding the replicated or modified packets to individual ones 104

of the second ports.

Harriman does not explicitly disclose providing a plurality of multicast

engines within a router.

Chao (5,724,351) discloses the multicast-capable fabric card 104

coupled by port paths (1-N input ports and 1-M & N-M+1-N output ports;

fig.1) to other cards (SSM1-SSMk 104) within the same router 100. Therefore it

would have been obvious to a skilled artisan to implement the router 100

having port 110 comprised multicast engine 200 as taught in Harriman into

each of the switches (SSM1-SSMk 104) as taught by Chao in the router 100 and

the motivation being to minimize the throughput value at output ports {col.11,

lines 51-58, Chao}.

Regarding claim 28: Harriman (5,898,687) discloses that the multicast engine

200 is integrated as a part of a port of a line card 110 in the router 100 (fig.1,

Harriman).

Regarding claim 29: Harriman (5,898,687) discloses that the multicast engine

200 is integrated as a part of a port of a fabric card 110 in the router 100

(fig.1, Harriman).

Regarding claim 30: Harriman (5,898,687) discloses that the multicast engine

200 is a stand-alone component (fig.2) and the second ports (102 & 104) with

which the first ports 136 communicate are ports of one or more fabric cards

110 in the router 100 (figs.1-2, Harriman).

9.   Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Harriman (5,898,687) over Chao (5,724,351) as applied to claim 27 above, and

further in view of Teraslinna (4,991,171).

Regarding claim 32: Harriman does not explicitly disclose that the tabled

instructions 260 associated with individual multicast engines 200 are updated

periodically.

Teraslinna (4,991,171) discloses translation table frequently (periodically)

updated {col.1, lines 60-62}. Therefore, it would have been obvious to a skilled

artisan to implement the teaching of updating frequently (periodically) the

translation table as taught by Teraslinna into the translation table 260 in

multicast engine 200 as taught by Harriman and the motivation being to

maintain the consistency of the translation table data, especially when packet

destination are added or deleted.

10.   Any inquiry concerning this communication or earlier communications

from the examiner should be directed to Phuongchau Ba Nguyen whose

telephone number is 703-305-0093. The examiner can normally be reached

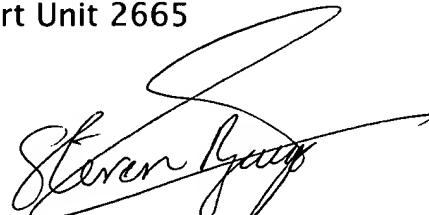on Monday-Friday from 10:00 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Huy Vu can be reached on 703-308-6602. The fax

phone numbers for the organization where this application or proceeding is

assigned are 703-872-9314 for regular communications and 703-872-9314

for After Final communications.

Any inquiry of a general nature or relating to the status of this application

or proceeding should be directed to the receptionist whose telephone number

is 703-305-4700.

Phuongchau Ba Nguyen
Examiner
Art Unit 2665

July 11, 2002